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EVALUATION OF A PINE ENGRAVER BEETLE INFESTATION SANDPOINT DISTRICT, IDAHO PANHANDLE NATIONAL FORESTS, 1974

by

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INTRODUCTION

An outbreak of the pine engraver *Ips pini* (Say), was reported by Sonny LaSalle, Forester, in a mixed second-growth Douglas-fir,lodgepole, ponderosa pine stand on the Sandpoint Ranger District near Edgemere, Idaho. This report was received in early January 1974. An evaluation of the infestation was made April 18, 1974.

LOCATION AND INTENSITY OF INFESTATIONS

An aerial survey prior to ground examination showed over 1,000 "red-topped" trees had been killed around the edges and within the thinned stands during 1973. Examination of these infested stands showed both ponderosa pine, *Pinus ponderosa* Laws, and lodgepole pine, *Pinus contorta* Dougl. were infested, with the latter being the favored host.

Populations of this beetle increased to epidemic levels in slash created during commercial thinning of four adjacent blocks totaling 550 acres (Fig. 1).

Thinning in the various blocks occurred as follows:

Area 1.--This was an overstory removal during fall 1971, and then pre-commercially thinned in the spring of 1973. (This stand is mixed ponderosa-lodgepole pine.) Slash in this area was relatively light. There is some current beetle activity.

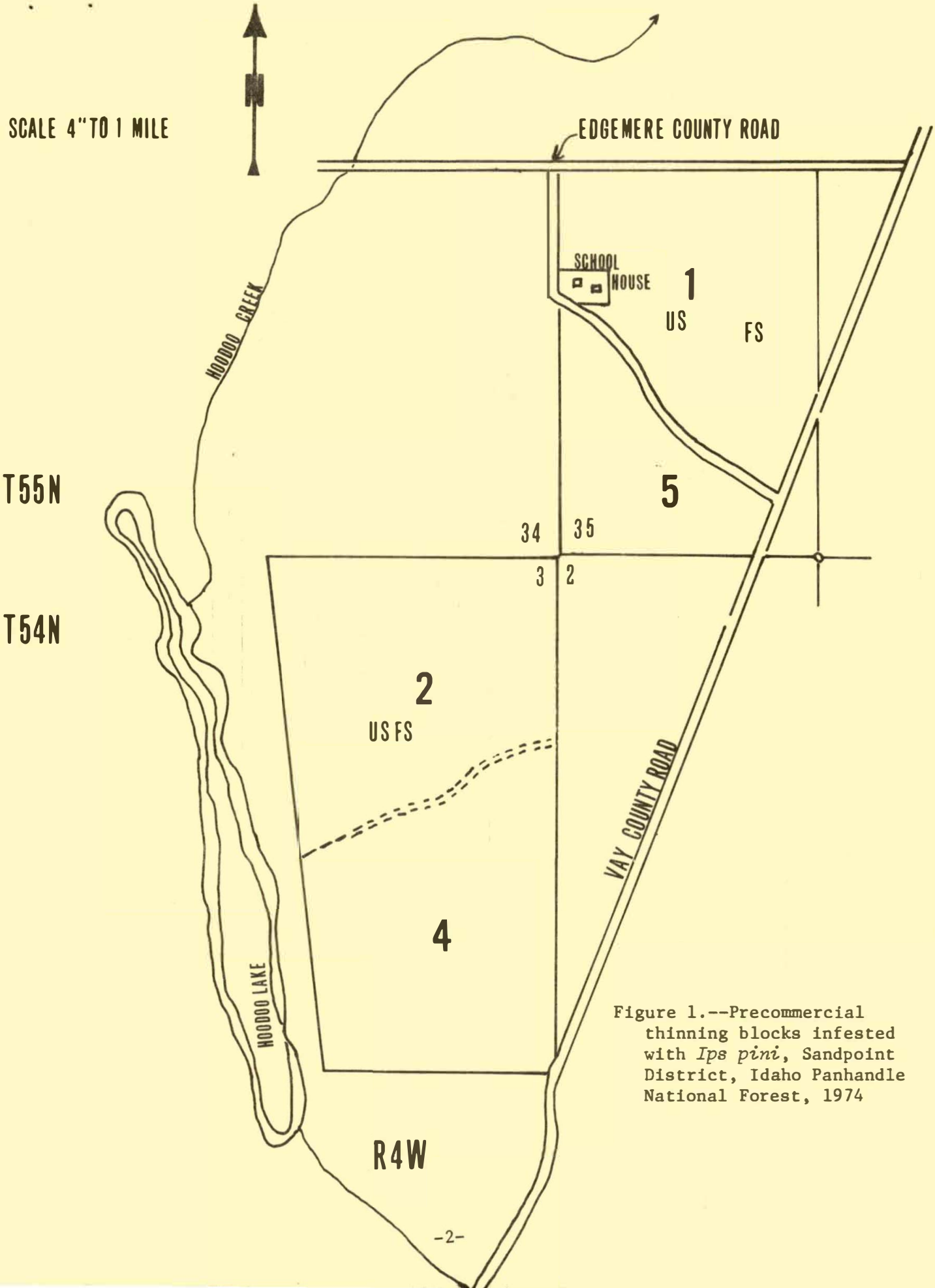

Figure 1.--Precommercial thinning blocks infested with *Ips pini*, Sandpoint District, Idaho Panhandle National Forest, 1974

Area 2.--This was an overstory removal during fall 1971, then pre-commercially thinned during fall 1972. The stand is mixed lodgepole-ponderosa pine, western larch, and Douglas-fir. Slash concentrations were moderate to heavy. Infested trees were numerous in this block.

Area 4.--This block was precommercially thinned during spring 1972. The stand is mixed lodgepole-ponderosa pine, with ponderosa pine being dominant. This area was dozer trampled during fall 1972. No beetle activity, 1973 or 1974, was observed in this block.

Area 5.--This area was lightly thinned (in clumps) during fall 1972. Slash was scattered and very light. Insect activity was light in this block.

At the time this evaluation was conducted, the majority of beetles were in the overwintering stage (adults) in standing infested trees. However, many standing trees had been recently attacked, and beetles had constructed 2 to 3 inches of egg gallery and were depositing eggs. All currently attacked trees observed were lodgepole pine. No infested ponderosa pine was observed during the evaluation.

FACTORS WHICH FAVOR PINE ENGRAVER ACTIVITY

Pine engraver beetles attack lodgepole and ponderosa pine 2 inches and larger in diameter. However, trees 3 inches d.b.h. and smaller usually desiccate rapidly and beetle mortality in these trees is high with very few insects reaching the adult stage. Larger trees have thicker bark and maintain an environment favorable for brood development; consequently, many mature to adults.

Normally there are two generations per year but, depending on climatic conditions and elevation, as many as three to four generations may occur in a single year. Once populations have increased to epidemic levels in slash or other suitable breeding material, they are capable of killing healthy trees in or near disturbed areas. Greatest tree killing occurs in midsummer from second generation broods which result from adults that have overwintered in slash and/or standing trees.

Slash deposited any time of year may become infested. Slash from August through April thinnings can become infested the following spring, and slash resulting from May through July thinnings will be infested that summer.

PREVENTATIVE MEASURES

Tree killing by the pine engraver beetle may be kept at a tolerable level by applying one or more of the following procedures:

1. Slash deposited from late fall through early spring, and infested during late April and May, should be piled and burned or dozer-trampled before beetle emergence in late June or the first week of July.

2. Slash deposited from May through September should be piled and burned prior to beetles emerging. Whenever weather conditions inhibit burning of infested slash, the material could be run through a chipper, or dozer-trampled before beetles emerge to infest new slash. Broods in this slash can develop and emerge in 40 to 60 days. This infested material should be examined periodically so as to destroy this material prior to beetle emergence.

3. Slash exposed to sunlight will dry out faster than shaded slash and cause considerable brood mortality.

4. Wherever possible, avoid successive annual thinnings within a given stand.

5. Maintain a continuous supply of slash by thinning large areas in small blocks to reduce the incidence of attacks in green trees.

6. Trap logs may be used to attract *Ips* from infested slash, duff, or standing green trees. These should be sprayed, with ethylene dibromide or processed in the mill prior to beetle emergence.

7. Standing infested trees should be felled and removed from the area prior to beetle emergence. These trees could be marked along with a commercial thinning operation. In this case, they should be removed by June 30. Broods could mature and emerge by that date.

DISCUSSION AND RECOMMENDATIONS

Care must be exercised in burning infested slash to avoid scorching standing green leave trees. Scorched trees are weakened and are more susceptible to attack by the red turpentine beetle, *Dendroctonus valens*, as well as *Ips pini*.

The dozer trampling of slash implemented by the District was apparently extremely effective in reducing volume of bait material for brood development. Breaking up of the slash and knocking bark from infested slash aided in making it desiccate rapidly which resulted in a minimum of *Ips* brood development. Very few, if any, standing infested trees were observed in this area. This procedure might be employed in future thinnings to reduce and keep *Ips* populations at a tolerable level.

Commercial thinnings should be encouraged as some trees that were bored have released and grown as much the last 2 years as they did the previous 8 years.

In marking standing infested trees prior to cutting this spring or early summer, care must be exercised to watch for reddish boring dust in bark cracks, as *Ips* do not normally make pitch tubes. Trees with off-colored fading crowns are also evidence of *Ips* attack. Many trees can be top killed, and have no broods in the lower crown, then reattacked the following year in the lower two-thirds of the bole.